APPENDIX A

Construction Inspection Reports

APPENDIX A1

Construction Inspection Report
North and South Plants
Construction and Sitework

Construction Inspection Report
for
Newmark OU Remedial Action
Newmark Groundwater Contamination Superfund Site
North and South Plants
Construction and Sitework

DRAFT

Prepared for:

Contract No. 68-W-98-225 / WA No. 015-RARA-09J5
U.S. Environmental Protection Agency
Region IX
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1.0 INTRODUCTION

This report is a summary of field inspection results during the construction of the Newmark North and South Water Treatment Plants.

The construction inspection was performed by URS Group, Inc. (URSG) for the United States Environmental Protection Agency (USEPA). URSG performed the inspection under contract number 68-W9-0054 and work assignment number 54-47-9NJ5.

1.1 JOB DESCRIPTION

The Newmark Groundwater Contamination Superfund Site, North and South Plants, consists of two separate granular activated carbon (GAC) water treatment plants. The plants remove organic contaminants from groundwater which is pumped to the plants through a system of pipelines. The North Plant treats water that is pumped from an area downgradient from an unknown source of contamination, and the South Plant treats water that is at the leading edge of the contaminated groundwater plume.

The North Plant is located at 1265 Reservoir Drive. It includes fourteen 20,000-pound GAC vessels, and a total design flow rate of 4,875 gallons per minute (gpm). The vessels operate in seven serial pairs in parallel.

The South Plant is located on Waterman Avenue, one block north of the Route 30 Freeway. It includes sixteen 20,000 pound GAC vessels, with a total design flow rate of 5,610 gpm. The vessels operate in eight serial pairs in parallel.

The scope of work included construction of concrete pads, installation of site pipelines and electrical lines, grading, paving, and landscaping.

Clearwater Environmental, Inc. (Clearwater) was procured and subcontracted by URSG to complete the construction. The GAC vessel fabrication and installation was completed under a separate contract.

2.0 CONSTRUCTION SUMMARY

2.1 TASKS COMPLETED

September 1997

- The Notice to Proceed was issued on September 25.

October 1997

- A preconstruction meeting was held on October 1.
- Clearwater mobilized on October 20, and commenced clearing and grubbing at the South and North Plants on October 21.

North Plant

- Clearwater started removing existing 16-inch and 4-inch water lines, and existing asphalt concrete on October 27.

South Plant

- On October 28, Clearwater continued to haul debris from the construction area.

November 1997

- On November 7, Clearwater started excavation for the 24-inch raw and treated water lines at the North and South Plants.

North Plant

- On November 4, Clearwater commenced the removal of the 30-inch water line from the excavation. This was completed on November 21.
- On November 10, while excavating the 24-inch raw and treated water lines, Clearwater encountered an abandoned brick septic tank. The tank was removed and the area backfilled with sand.

South Plant

- Clearwater installed the conduit for the GTE fiber optics line on November 4. On November 6, Clearwater placed a junction box for the fiber optics cable and GTE ran the cable.

- Excavation for the 24-inch raw water lines continued on November 18. Clearwater advised URSG on November 19 that a previously unidentified electrical conduit duct bank conflicted with the effluent waterline. The duct bank was placed shallower in the soil to avoid the effluent water line, mandating the conduit to be concrete encased.

December 1997

North Plant

- Pipeline backfill and compaction testing began on December 3.
- On December 11, the San Bernardino Municipal Water Department (SBMWD) relocated the 8-inch backwash supply line.
- On December 15, Clearwater began excavating for the risers for the north slab and making grade for the anti-siphon loop.
- On December 23, Clearwater began placing pipe and tying into the existing 16-inch raw water line from Extraction Well Number 4.

South Plant

- On December 11, Clearwater made grade for the effluent line.

January 1998

North Plant

- Clearwater began grading for the pads on January 1. Also weld a 45° offset to the effluent line and set the 90° fittings for the anti-siphon loop.
- On January 8, continued to build anti-siphon loops and the pad for the anti-siphon loop was poured on January 12. An effluent line and laterals were placed and the vessel pads compacted.
- On January 26, commenced placing Class 2 base for the construction of the vessel pads.
- Started to build forms for the drain channel of the north pad and began to install rebar.

South Plant

- On January 23, started placing pipe.

February 1998

North Plant

- On February 3, the finish grade for the south pad drain channel was completed.
- On February 5, the north pad drain channel was poured. The south drain channel was poured on February 11.
- Placed the steel for the north pad on February 16. Clearwater moved soil from the North Plant to the South Plant during February 17 and 18.
- On February 20, the north pad was poured. On February 26, the 8-inch risers were raised for vessel tie-ins.

South Plant

- Clearwater backfilled the raw water line on February 3 and performed compaction testing.
- On February 5, holes were cored in the foundation of the blower-building for electrical conduit runs.
- On February 12, Clearwater continued to backfill and compact pipe that had been installed. Work continuing to be performed for the anti-siphon loop and installation of pipe and laterals on the effluent line.

March 1998

North Plant

- On March 3, continued to place steel and build forms for the south pad. The south pad was poured on March 9. The pour totaled 125 cubic yards.
- From March 13 through 16, Clearwater placed and compacted base for the pads.
- On March 21, the anti-siphon loop slab was poured. The loop was assembled and raised on March 22.

South Plant

- On March 3, Clearwater backfilled and compacted soil around installed pipes.
- Clearwater decided to revise base material from Class II to crushed miscellaneous base (CMB) on March 19. On March 20, Clearwater commenced placing the CMB.

- Started tying steel for the west pad drain channel on March 24. Forms for the drain channel were constructed.

- The drain channel for the west pad was poured on March 31.

April 1998

North Plant

- On April 8, started installing conduit in trenches from the control room to the north and south pads.

- On April 23, placed the 8-inch back wash supply line.

- The meter vault was set on April 30.

- Performed a hydrostatic test of the raw water line on April 30.

South Plant

- On April 7, the steel rebar ties were finished for the west pad, and work continued to install the control panel inside of the blower building.

- By April 13, the west pad was poured.

- Started to place rebar in the drain channel for the north pad on April 21. The forms for the north pad drain channel were completed on April 23. On April 24, the floor of the north pad drain channel was poured.

- On April 27, started building forms and placing rebar for the north pad.

May 1998

North Plant

- Performed a hydrostatic test of the effluent line and 8-inch backwash supply line on May 5.

- Electrical junction boxes were installed on May 11.

- On May 18, Clearwater started grading.

- On May 21, the North Plant Transmission Pipeline tie-in was completed inside of the plant. On May 28, Clearwater continued working on sub-grade.

South Plant

- The north pad was poured on May 8.
- Clearwater excavated the electrical conduit trench on May 11.
- Performed a hydrostatic test of the raw water line and effluent line on May 26.
- Continued work with the 12-inch drain line and the backwash supply line on May 28.

June 1998

North Plant

- On June 1, placed Class II base and pavement.
- Electrical hard wiring began on June 2.
- An electrical test was performed on June 4.

South Plant

- On June 2, installed electrical conduit along the pads began hard wiring on June 8.
- Clearwater graded the main lot and approach.
- The concrete was poured for the approach on June 10, and the base was placed for paving on June 12. The approach was paved on June 13.
- On June 17, SBMWD made the 24-inch raw water tie-in.
- An electrical test was performed on June 18.

July 1998

- Start-up for both plants was performed on July 15 and 16.

North Plant

- Fencing was completed on July 6.

2.2 PROBLEMS ENCOUNTERED AND RESPECTIVE SOLUTIONS

October 1997

- A bi-monthly progress meeting was held on October 28. Since Waterman Avenue is a state highway, a decision was made to reroute the waste water line to the sanitary sewer under Leroy Street. It was also decided to remove two large eucalyptus trees at the North Plant.

- On October 23, CDE Surveyors found a discrepancy in the plans concerning the location of a 30-inch water line inside of the North Plant. The line was removed and replaced with a 24-inch DIP, in the proper location.

November 1997

- Clearwater broke a water line while excavating at the North Plant on November 20, which they repaired.

December 1997

- On December 1, URSG made revisions to the grading plans at the South Plant.

January 1998

- Three of four compaction tests were less than the required 95% relative compaction at the North Plant; therefore, the area was reworked and tested again.

- On January 12, rain contamination required one joint of pipe to be pulled and cleaned at the North Plant.

- On January 20, the anti-siphon loop at the North Plant was mis-measured. The loop was taken down and two feet added.

- On January 27, compaction tests on the Class II base for the pads at the North Plant were not passing, so more water and effort were needed to get adequate compaction.

February 1998

- Due to rain, Clearwater pumped water from excavations at both plants on February 9.

- The steel chairs were found to be too short for proper separation of the mat on the north pad at the North Plant on February 16. Dobies were installed to get the proper 10-inch clearance.

- Twenty feet in length of steel in the north slab at the North Plant was too high so it was lowered by Clearwater on February 18.

- Due to heavy rains in February, Clearwater cleaned out debris in the south drain channel at the North Plant on February 19. On February 26, the 8-inch risers at the North Plant were cleaned due to rain contamination. Clearwater flushed the 24-inch raw water and effluent lines before hydrostatic testing.

- Rock pockets were found in the concrete on the north pad at the North Plant on February 27; therefore, the walls of the pad were sacked.

March 1998

- On March 2, the grates that cover the drain channel for the vessel pads were found to be warped and they "rocked" when in place. The grates that were bent were returned to the factory and straightened.

- Due to the poor quality of the concrete pour on March 9, URSG requested detailed plans for the concrete pours and formwork construction. Clearwater provided the requested plans, and they were adhered to.

- On March 18, Clearwater encountered base that was very sandy placing it for the west and north pads at the South Plant. CHJ took samples of the base for gradation tests. The tests did not meet specifications; therefore, the base was replaced with CMB.

April 1998

- The water stop strip was 30 feet too short in the west pad at the South Plant on April 7. This was subsequently corrected.

- On April 13, as the west pad at the South Plant was poured, the forms bulged on the pad wall several inches, at both the north and south ends. The forms were straightened.

- Upon inspection after the pad was stripped, the drain channel wall was found to be crooked. This was corrected by saw cutting the outside drain channel wall and re-beveling the edges.

- On April 13, Clearwater changed the galvanized electrical conduit pipe wrapped in 10 mil PVC tape to PVC-coated steel pipes.

2.3 QUALITY ASSURANCE TEST SUMMARY

2.3.1 Compaction Testing

Compaction tests were taken by CHJ Inc., (CHJ), a certified independent testing lab. CHJ performed tests of backfill, sub-grade, and base material. All of the compaction tests were taken with a nuclear density

gauge, using the Nuclear Density Gauge method per ASTM standard D 2922 and according to the Sand Cone Method per ASTM Standard D 1556. All of the compaction tests passed. Compaction test results are contained in Appendix A.

2.3.2 Hydrostatic Testing

The hydrostatic tests were performed according to The City of San Bernardino Municipal Water Department (SBMWD) Specification No. 1292, Section 6-1.1. The pipelines passed the hydrostatic tests.

2.3.3 Concrete Testing

Concrete tests were performed by ~~CHJ~~. Cylinders were taken during each concrete pour. The compressive strength tests were performed according to ASTM C39 Standard Method for Testing Comprehensive Strength of Cylindrical Concrete Specimens. The slump tests were performed according to ASTM C143, Standard Test Method for Slump of Hydraulic Cement Concrete. Concrete test results are contained in Appendix B.

2.3.4 Electrical Testing

Wave Engineering, Inc. performed the oversight of electrical testing of the plants. Both plants passed the electrical tests.

2.4 AGENCY INVOLVEMENT

The following agencies were involved in the construction of the North and South Water Treatment Plants:

1. SBMWD was responsible for inspection of the pipeline, purchasing construction materials, and approving the compaction, hydrostatic, and concrete testing.

2. The San Bernardino Public Works Department was responsible for road inspection.

3. The California Department of Transportation inspected construction of the approach to the Waterman Plant.

2.5 CHANGE ORDER SUMMARY

Eleven change orders were issued during the course of the field work. A total of 51 rain days, which extended the completion date, were included in these modifications. Appendix C includes the Change Order Request Log.

2.6 PUNCH LIST ITEMS

Appendix D contains the punch list compiled by URSG. Clearwater successfully completed the subcontract by completing the punch list items.

2.7 CONCLUSION

The scope of work associated with the North and South Water Treatment Plants was completed according to the plans and specifications. The pipeline was ready for use pending tie-in's to the extraction wells, the North Plant and the South Plant by SBMWD.

Appendix A
Construction Inspection Report
North and South Plants
Construction and Sitework
Compaction Test Results

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - WATER LINE TRENCH BACKFILL, WATER TREATMENT PLANT, RESERVOIR DRIVE, SAN BERNARDINO, CALIFORNIA

Job No. 97722-1
Sheet 1 of 2

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
11/4/97	BF-1	Water Line, East Portion		5.0	2.0-3.0	114.7	132.0	87	7.5	1	R.X. 15%, See BF-3
	BF-2	Water Line, Center Portion		5.0	0.0-1.0	121.2	132.0	92	8.5	1	R.X. 15%, See BF-4
12/3/97	BF-3	Water Line, East Portion		9.0	6.0-6.5	124.8	129.0	96	9.5	1	R.X. 5%
	BF-4	Water Line, Center Portion		9.0	4.0-4.5	126.0	130.5	97	11.0	1	R.X. 10%
	BF-5	Water Line, South Portion		9.0	4.0-4.5	123.1	129.5	95	12.5	3	
	BF-6	Water Line, South Center Portion		9.0	2.0-2.5	122.8	129.5	95	12.0	3	
12/16/97	BF-7	Water Line, Northwest Portion		9.0	9.0-9.5	125.1	129.5	97	9.5	3	
	BF-8	Water Line, Center West Portion		9.0	9.0-9.5	124.3	129.5	96	8.2	3	
	BF-9	Water Line, Southwest Portion		9.0	9.0-9.5	127.9	129.5	98	7.5	3	
12/19/97	BF-10	Water Line, East Portion		9.0	9.0-9.5	116.5	129.5	90	9.0	3	
	BF-11	Water Line, Center Portion		9.0	9.0-9.5	120.7	129.5	93	9.2	3	
	BF-12	Water Line, West Portion		9.0	9.0-9.5	126.7	129.5	98	9.0	3	
	BF-13	Water Line, East Portion, Station 1 + 15		9.0		120.4	129.5	93	8.9	3	
1/6/98	BF-14	Station 1 + 23, Elev. 1409.2'				117.0	129.5	90	10.6	3	
	BF-15	Station 0 + 90, Elev. 1407.5'				110.0	129.0	85	12.5	3	* See BF 30
	BF-16	Station 0 + 15, Elev. 1407.5'				126.2	129.5	97	8.3	3	
	BF-17	Station 0 + 15, Elev. 1408.7'				127.9	129.5	99	7.8	3	
1/9/98	BF-18	Station 0 + 5, Elev. 1409.0'				118.5	129.5	91	5.8	3	
	BF-19	Station 0 + 15, Elev. 1409.7'				125.2	129.5	97	5.9	3	
	BF-20	Station 0 + 15, Elev 1409.0'				118.4	129.5	91	7.6	3	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - WATER LINE TRENCH BACKFILL AND STREET SUBGRADE AND FINISH GRADE, WATERMAN WATER TREATMENT PLANT, SAN BERNARDINO, CALIFORNIA

Job No. 97722-1
Sheet 1 of 5

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
12/12/97	BF-1	Station 46+00, Elev. 1235.0'			1.0-1.5	107.7	124.0	86	10.5	2	**
	BF-2	Station 51+00, Elev. 1237.4'			0.0-0.5	121.6	124.0	98	9.5	2	
	BF-3	Station 56+00, Elev. 1237.8'			0.0-0.5	121.3	124.0	98	11.2	2	
	BF-4	Station 41+00, Elev. 1237.3'			0.0-0.5	112.8	124.0	91	8.5	2	
12/12/97	SG-1	Station 78+00, Elev. 1237.3'			0.0-0.5	119.7	124.0	97	8.1	2	
	SG-2	Station 1+10, Elev. 1237.4'			0.0-0.5	114.6	124.0	92	10.5	2	
	SG-3	Station 0+59, Elev. 12374.'			0.0-0.5	113.5	124.0	92	6.8	2	
	BF-3	Station 0+10, Elev. 1238.0'			0.0-0.5	112.6	124.0	91	8.1	2	
	BF-6	Station 0+50, Elev. 1238.0'			0.0-0.5	115.0	124.0	93	8.1	2	
	BF-7	Station 1+30, Elev. 1238.0'			0.0-0.5	113.3	124.0	91	8.5	2	
	BF-8	Station 0+70, Elev. 1238.0'			0.0-0.5	120.2	124.0	97	5.9	2	
1/7/98	BF-9	Station 1+15, Elev. 1238.0'			0.0-0.5	117.6	124.0	95	7.0	2	
1/28/98	BF-10	Station 0+53, Riser			0.0-0.5	118.5	124.0	96	9.1	2	
	BF-11	Station 0+88, Riser			0.0-0.5	120.9	124.0	98	9.5	2	
	BF-12	Station 1+00, Riser			0.0-0.5	121.2	124.0	98	8.1	2	
1/29/98	BF-13	Station 1+67, Riser			0.0-0.5	116.4	129.5	90	8.1	3	
	BF-14	Station 1+54, Riser			0.0-0.5	121.4	129.5	94	6.6	3	
2/2/98	BF-15	Station 2+20, Elev. 1238.6'			0.0-0.5	114.8	124.0	93	13.1	2	
	BF-16	Station 2+00, Elev. 1238.6'			0.0-0.5	114.1	124.0	92	8.4	2	
	BF-17	Station 0+5, Elev. 1238.6'			0.0-0.5	111.0	124.0	90	8.9	2	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure; (**) Failure, No Retest Requested

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - PAD FILL-IN-PROGRESS, WATER TREATMENT PLANT, RESERVOIR DRIVE, SAN BERNARDINO, CALIFORNIA

Job No. 97722-1
Sheet 1 of 5

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
12/30/97	FP-1	Station 0+30, Elev. 1407.4'			0.0-0.5	111.7	129.5	85	6.5	3	* See FP-6
	FP-2	Station 0+90, Elev. 1407.4'			0.0-0.5	113.0	129.5	86	6.5	3	* See FP-7
	FP-3	Station 1+00, Elev. 1406.7'			0.0-0.5	111.0	129.5	86	6.5	3	* See FP-4
	FP-4	Station 0+90, Elev. 1406.5'			0.0-0.5	126.7	129.5	98	8.5	3	
	FP-5	Station 0+90, Elev. 1406.2'			0.0-0.5	127.6	129.5	98	8.4	3	
12/31/97	FP-6	Station 0+30, Elev. 1407.4'			0.0-0.5	128.5	129.5	99	10.6	3	
	FP-7	Station 0+90, Elev. 1407.4'			0.0-0.5	124.3	129.5	96	9.0	3	
1/5/98	FP-8	Station 0+10, Elev. 1407.7'			0.0-0.5	125.3	129.5	97	7.8	3	
	FP-9	Station 0+50, Elev. 1407.7'			0.0-0.5	128.3	129.5	98	8.1	3	
	FP-10	Station 0+90, Elev. 1406.5'			0.0-0.5	116.8	129.5	90	12.0	3	* See FP-14
	FP-11	Station 0+90, Elev. 1408.3'			0.0-0.5	125.1	129.5	97	7.7	3	
	FP-12	Station 0+90, Elev. 1407.0'			0.0-0.5	118.4	129.5	91	7.0	3	
	FP-13	Station 0+90, Elev. 1406.8'			0.0-0.5	122.1	129.5	95	7.5	3	
1/6/98	FP-14	Station 0+85, Elev. 1406.0'			0.0-0.5	130.5	129.5	100	7.3	3	
	FP-15	Station 0+95, Elev. 1406.0'			0.0-0.5	126.7	129.5	97	10.2	3	
1/7/98	FP-16	Station 0+80, Elev. 1408.2'			0.0-0.5	124.3	129.5	96	8.6	3	
	FP-17	Station 0+31, Elev. 1408.0'			0.0-0.5	124.0	129.5	96	10.5	3	
	FP-18	Station 1+20, Elev. 1408.0'			0.0-0.5	118.0	129.5	91	11.0	3	* See FP-19
1/8/98	FP-19	Station 1+20, Elev. 1408.0'			0.0-0.5	127.2	129.5	98	9.0	3	
	FP-20	Station 1+20, Elev. 1409.2'			0.0-0.5	125.3	129.5	92	7.0	3	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - PAD FILL-IN-PROGRESS, WATER TREATMENT PLANT, RESERVOIR DRIVE, SAN BERNARDINO, CALIFORNIA

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
1/26/98	FP-41	Station 1+20, Elev. 1410.53'			0.0-0.5	133.4	135.0	99	6.3	4	
	FP-42	Station 0+30, Elev. 1410.53'			0.0-0.5	129.1	135.0	96	5.9	4	
	FP-43	Station 1+26, Elev. 1410.53'			0.0-0.5	125.6	129.5	96	8.5	3	
	FP-44	Station 0+70, Elev. 1410.53'			0.0-0.5	126.5	129.5	97	9.4	3	
	FP-45	Station 0+35, Elev. 1410.53'			0.0-0.5	128.9	135.0	95	7.4	4	
	FP-46	Station 0+35, Elev. 1410.53'			0.0-0.5	127.9	135.0	95	6.7	4	
	FP-47	Station 0+50, Elev. 1410.53'			0.0-0.5	128.5	135.0	95	6.6	4	
	FP-48	Station 0+50, Elev. 1410.53'			0.0-0.5	130.8	135.0	97	6.8	4	
1/26/98	FP-49	Station 1+20, Elev. 1411.0'			0.0-0.5	127.0	129.5	98	8.8	3	
	FP-50	Station 1+10, Elev. 1411.0'			0.0-0.5	125.8	129.5	97	8.9	3	
	FP-51	Station 1+20, Elev. 1411.0'			0.0-0.5	118.8	129.5	92	12.7	3	* See FP-55
	FP-52	Station 1+20, Elev. 1411.0'			0.0-0.5	117.8	129.5	91	11.6	3	* See FP-55
	FP-53	Station 0+60, Elev. 1411.0'			0.0-0.5	121.3	129.5	94	8.2	3	
	FP-54	Station 0+60, Elev. 1411.0'			0.0-0.5	122.1	129.5	95	9.7	3	
	FP-55	Station 0+90, Elev. 1411.0'			0.0-0.5	122.8	129.5	95	10.6	3	
	FP-56	Station 0+90, Elev. 1411.0'			0.0-0.5	124.2	129.5	96	11.7	3	
	FP-57	Station 0+20, Elev. 1411.0'			0.0-0.5	117.9	129.5	91	13.0	3	* See FP 69
1/27/98	FP-58	Station 0+16, Elev. 1411.1'			0.0-0.5	123.2	129.5	92	6.2	3	* See FP 63
	FP-59	Station 0+16, Elev. 1411.1'			0.0-0.5	125.1	129.5	94	6.1	3	* See FP 64
	FP-60	Station 0+53, Elev 1411.1'			0.0-0.5	123.9	129.5	93	7.2	3	* See FP 65

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - PAD FILL-IN-PROGRESS, WATER TREATMENT PLANT, RESERVOIR DRIVE, SAN BERNARDINO, CALIFORNIA

Job No. 97722-1
Sheet 5 of 5

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
2/02/98	FP-81	Station 1 + 18, Elev. 1409.1'			0.0-0.5	130.6	135.5	96	6.8	4	
	FP-82	Station 1 + 18, Elev. 1408.0'			0.0-0.5	129.9	135.5	96	5.7	4	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - WATER LINE TRENCH BACKFILL AND STREET SUBGRADE AND FINISH GRADE, WATERMAN WATER TREATMENT PLANT, SAN BERNARDINO, CALIFORNIA

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
2/10/98	BF-18	East of Effluent Line, Elev. 1239.4'			0.0-0.5	113.5	124.0	92	12.1	2	
	BF-19	Anti-Siphon Loop, Elev. 1239.4'			0.0-0.5	111.5	124.0	90	6.4	2	
	BF-20	Station 1+18, Elev. 1240.9'			0.0-0.5	118.7	124.0	96	7.7	2	
2/13/98	BF-21	Station 0+20, Elev. 1236.7'			0.0-0.5	120.9	124.0	98	6.7	2	
	BF-22	Station 0+95, Elev. 1238.0'			0.0-0.5	120.5	124.0	97	5.4	2	
	BF-23	Station 0+24, Elev. 1242.5'			0.0-0.5	119.2	124.0	96	13.3	2	
2/18/98	BF-24	Station 1+64, Elev. 1243.0'			0.0-0.5	108.1	124.0	87	16.7	2	* See BF-31
3/2/98	BF-25	Station 0+29, Elev. 1241.0'			0.0-0.5	115.8	124.0	93	12.9	2	
	BF-26	Station 0+59, Elev. 1241.0'			0.0-0.5	121.3	124.0	98	10.7	2	
	BF-27	Station 0+55, Elev. 1241.2'			0.0-0.5	120.3	124.0	97	13.6	2	
	BF-28	Station 1+10, Elev. 1241.0'			0.0-0.5	117.5	124.0	95	12.2	2	
3/3/98	BF-29	Station 2+26, Elev. 1244.0'			0.0-0.5	124.5	124.0	100	7.4	2	
	BF-30	Station 2+16, Elev. 1244.0'			0.0-0.5	123.5	124.0	99	9.7	2	
	BF-31	Station 1+64, Elev. 1243.9'			0.0-0.5	119.3	124.0	99	10.7	2	
3/5/98	SG-4	Station 1+55			0.0-0.5	123.1	124.0	99	6.0	2	
	SG-5	Station 1+12			0.0-0.5	120.5	124.0	97	8.1	2	
	SG-6	Station 0+25			0.0-0.5	118.9	124.0	96	6.9	2	
	SG-7	Station 0+84			0.0-0.5	124.9	124.0	100	5.7	2	
3/13/98	FG-1	Station 1+40, Elev. 1245.0'			0.0-0.5	127.9	135.0	95	10.0	4	
	FG-2	Station 1+70, Elev. 1245.0'			0.0-0.5	128.8	135.0	95	10.5	4	

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

FIELD COMPACTION TEST SUMMARY SHEET

PROJECT: URS GREINER, INC. CALIFORNIA - WATER LINE TRENCH BACKFILL AND STREET SUBGRADE AND FINISH GRADE, WATERMAN WATER TREATMENT PLANT, SAN BERNARDINO, CALIFORNIA

Date	Test No.	Location of Test	Depth Of Cut (ft.)	Depth Of Fill (ft.)	Depth Of Test (ft.)	DENSITIES			MC (%)	Soil Type	Remarks or Retest of
						Dry (lbs./ cu. ft.)	Max. (lbs./ cu. ft.)	Rel. (%)			
3/24/98	FG-18	Station 0+40			0.0-0.5	122.0	123.0	98	12.2	7	
	FG-19	Station 0+80			0.0-0.5	122.7	123.0	99	12.2	7	
	FG-20	Station 1+10			0.0-0.5	119.1	123.0	97	12.3	7	
4/15/98	SG-14	Station 1+13			0.0-0.5	113.8	124.0	92	7.0	2	
	FG-21	Station 1+15			0.0-0.5	122.9	123.0	98	8.0	7	
	FG-22	Station 0+80			0.0-0.5	125.0	123.0	100	9.0	7	
4/17/98	FG-23	Station 1+15			0.0-0.5	122.9	123.0	99	9.0	7	
	FG-24	Station 0+75			0.0-0.5	122.8	123.0	99	9.0	7	
	FG-25	Station 0+28			0.0-0.5	119.8	123.0	97	10.2	7	
	FG-26	Station 0+48			0.0-0.5	117.8	123.0	98	12.2	7	
4/20/98	FG-27	Station 1+00			0.0-0.5	113.1	123.0	92	20.9	7	
	FG-28	Station 1+15			0.0-0.5	116.3	123.0	95	10.6	7	
4/21/98	SG-15	Station 1+12			0.0-0.5	123.2	124.0	99	5.8	2	
	SG-16	Station 1+00			0.0-0.5	123.8	124.0	99	6.8	2	
	SG-17	Station 0+16			0.0-0.5	123.5	124.0	97	5.9	2	
	SG-18	Station 0+00			0.0-0.5	117.2	124.0	95	9.4	2	
	SG-19	Station 0+81			0.0-0.5	119.6	124.0	96	10.7	2	
	SG-20	Station 1+30			0.0-0.5	117.4	124.0	94	12.1	2	
6/12/98	FG-29	Drive Approach			0.0-0.5	113.8	123.0	93	8.1	7	* See FG 32
	FG-30	Station 2+00			0.0-0.5	113.9	123.0	93	8.2	7	* See FG 31

LEGEND: (SG) Tests on Subgrade Elevation; (BF) Tests on Backfill; (FP) Tests on Fill in Progress; (FG) Tests on Finish Grade Elevation; (MC) Moisture Content; (RX) Rock Corrected; (*) Denotes Failure

Appendix B
Construction Inspection Report
North and South Plants
Construction and Sitework
Concrete Test Results

Table B-1
Concrete Test Results
North Plant

Date Cast	Location	Cylinder Number	Date Tested	Age Tested (days)	Total Load (lbs)	Compressive Strength (psi)	Slump (inches)
2/5/98	North Slab Drain Channel Floor	83880	2/12/98	7	79,951	2830	4.5
2/5/98	North Slab Drain Channel Floor	83881	3/5/98	28	133,200	4710	4.5
	North Slab Drain Channel Floor	83882	3/5/98	28	131,030	4630	4.5
2/11/98	South Slab Drain Channel Floor	84008	2/18/98	7	130,120	4600	3
2/11/98	South Slab Drain Channel Floor	84009	3/11/98	28	177,840	6290	3
2/11/98	South Slab Drain Channel Floor	84010	3/11/98	28	184,420	6520	3
2/20/98	North Slab Vessel Pad	84398	2/27/98	7	135,630	4800	2.75
2/20/98	North Slab Vessel Pad	84399	3/20/98	28	190,670	6740	2.75
2/20/98	North Slab Vessel Pad	84400	3/20/98	28	192,330	6800	2.75
2/20/98	North Slab Vessel Pad	84394	2/27/98	7	131,800	4460	3.5
2/20/98	North Slab Vessel Pad	84395	3/20/98	28	172,790	6110	3.5
2/20/98	North Slab Vessel Pad	84396	3/20/98	28	162,850	5760	3.5
3/9/98	South Slab Vessel Pad	84702	3/16/98	7	83,155	2940	3.75
3/9/98	South Slab Vessel Pad	84703	4/6/98	28	166,960	5910	3.75

Table B-1 (Cont'd)
Concrete Test Results
North Plant

Date Cast	Location	Cylinder Number	Date Tested	Age Tested (days)	Total Load (lbs)	Compressive Strength (psi)	Slump (inches)
3/9/98	South Slab Vessel Pad	84704	4/6/98	28	167,630	5930	3.75
3/9/98	South Slab Vessel Pad	84705	3/16/98	7	132,150	4670	4.25
3/9/98	South Slab Vessel Pad	84706	4/6/98	28	177,460	6280	4.25
3/9/98	South Slab Vessel Pad	84707	4/6/98	28	174,140	6160	4.25
3/9/98	South Slab Vessel Pad	84708	3/16/98	7	117,900	4170	3.5
3/9/98	South Slab Vessel Pad	84709	4/6/98	28	173,410	6130	3.5
3/9/98	South Slab Vessel Pad	84710	4/6/98	28	170,320	6020	3.5

Table B-2
Concrete Test Results
South Plant

Date Cast	Location	Cylinder Number	Date Tested	Age tested (days)	Total Load (lbs)	Compressive Strength (psi)	Slump (inches)
3/31/98	West Slab Drain Channel Floor	85061	4/7/98	7	114,570	4050	3
3/31/98	West Slab Drain Channel Floor	85062	4/28/98	28	172,750	6110	3
3/31/98	West Slab Drain Channel Floor	85063	4/28/98	28	164,520	5820	3
4/13/98	West Slab Vessel Pad	85469	4/20/98	7	99,707	3530	3
4/13/98	West Slab Vessel Pad	85470	5/11/98	28	165,910	5870	3
4/13/98	West Slab Vessel Pad	85471	5/11/98	28	161,050	5700	3
4/13/98	West Slab Vessel Pad	85473	4/20/98	7	106,660	3600	3.5
4/13/98	West Slab Vessel Pad	85474	5/11/98	28	165,910	5870	3.5
4/13/98	West Slab Vessel Pad	85475	5/11/98	28	161,050	5700	3.5
4/13/98	West Slab Vessel Pad	85477	4/20/98	7	91,322	3230	4
4/13/98	West Slab Vessel Pad	85478	5/11/98	28	155,500	5500	4
4/13/98	West Slab Vessel Pad	85479	5/11/98	28	153,630	5430	4
4/24/98	North Slab Drain Channel Floor	85785	5/1/98	7	114,530	4050	4.5
4/24/98	North Slab Drain Channel Floor	85786	5/22/98	28	158,810	5620	4.5

Table B-2 (Cont'd)
Concrete Test Results
South Plant

Date Cast	Location	Cylinder Number	Date Tested	Age tested (days)	Total Load (lbs)	Compressive Strength (psi)	Slump (inches)
4/24/98	North Slab Drain Channel Floor	85787	5/22/98	28	156,280	5530	4.5
5/8/98	North Slab Vessel Pad	86164	5/15/98	7	91,160	3220	4.75
5/8/98	North Slab Vessel Pad	86165	6/5/98	28	147,550	5220	4.75
5/8/98	North Slab Vessel Pad	86166	6/5/98	28	145,960	5160	4.75
5/8/98	North Slab Vessel Pad	86168	5/15/98	7	103,640	3670	4
5/8/98	North Slab Vessel Pad	86169	6/5/98	28	157,030	5550	4
5/8/98	North Slab Vessel Pad	86170	6/5/98	28	156,840	5550	4
5/8/98	North Slab Vessel Pad	86172	5/15/98	7	92,730	3280	4
5/8/98	North Slab Vessel Pad	86173	6/5/98	28	154,730	5470	4
5/8/98	North Slab Vessel Pad	86174	6/5/98	28	161,150	5700	4

Appendix C
Construction Inspection Report
North and South Plants
Construction and Sitework
Change Order Request Log

URS Greiner, Inc.

CHANGE ORDER REQUEST LOG

PROJECT: Newmark Remedial Action **PROJECT NO.:** 62470

CONTRACTOR: Clearwater Environmental, Inc. **CONTRACT NO.:** SC-97-F-0276

CO No	Description	COR Receipt Date	Date COR Approved or Disapproved	Date COR Returned to Contractor	COR NTE Amount	COR NTE # of Days	CO Number & Date	Definitive MOD# & Date	Definitive MOD Amount
1	Backwash waste to sanitary Sewer, add anti-siphon loops, change specs, cost of truckline & lateral redesign to include 24" x 8" crosses instead of tees	3/5/98	disapproved 5/7/98	5/7/98	$132,077.75	29	N/A	N/A	N/A
2	Remove & replace asphalt concrete paving as required to match up to existing pad at North Plant	11/12/97	disapproved 1/27/98	1/28/98	$5,944.00	1	N/A	N/A	N/A
2a	Remove & replace asphalt concrete paving to match up to existing pad at North Plant	12/10/97	approved 1/15/98	1/28/98	$5,492.28	1	MOD 1 1/15/98	MOD 2 4/20/98	$5,492.28
3	OSHA 24 hr training	11/12/97	disapproved 1/27/98	1/28/98	$13,578.51	0	N/A	N/A	N/A
4	Administrative costs due to changed conditions	11/12/97	disapproved 1/27/98	1/28/98	$14,620.00	172 hrs	N/A	N/A	N/A
5	Abandon septic tank encountered during excavation at North Plant	11/12/97	disapproved 1/27/98	1/28/98	$7,953.52	2	N/A	N/A	N/A
5a	Remove septic tank encounter during excavation at North Plant	12/10/97	approved 1/15/98	1/28/98	$9057.10	2	MOD 1 1/15/98	MOD 2 4/20/98	$9057.10
6	Coordination & realignment to remove & relocate the PacBell fiber optic cable at the Waterman Site	11/12/97	disapproved 1/27/98	1/28/98	$11,930.28	3	N/A	N/A	N/A

CO No	Description	COR Receipt Date	Date COR Approved or Disapproved	Date COR Returned to Contractor	COR NTE Amount	COR NTE # of Days	CO Number & Date	Definitive MOD# & Date	Definitive MOD Amount
14	Revise yard piping at North Plant to offset new effluent/influent piping. Change pressure testing of all water lines from air to water & specify testing for chlorine lines.	5/8/98	5/15/98 approved	5/15/98	$54,381.09	3 (approved 1 day)	MOD 7	MOD 7	$54,381.09
15	Add antisiphon loops to effluent lines at North & Waterman Plants	6/4/98	6/11/98 disapproved	6/12/98	$17,343.52	0	N/A	N/A	N/A
16	Revise yard piping at North Plant to accommodate 8' offset of the new 24" effluent/influent piping. Includes staff cost and con tract survey cost, and CPM schedule costs.	6/4/98	6/11/98 disapproved	6/12/98	$5,667.52	0	N/A	N/A	N/A
18	Sunk cost incurred by the subcontractors & Clearwater in support of the EPA request to install Force Mains at the North & Waterman sites. Credit for supply and installation of plug valves COR #13.	6/23/98			$11,272.42	0			
20	Constructing offset structures at the Waterman Site to avoid existing piping concrete electrical ductbank, ensure adequate pipeline coverage & maintain pipeline alignment.	6/4/98	6/11/98 approved	6/12/98	$21,552.88	0	MOD 8	MOD 8	$21,552.88
21	Installation of Kaiser Slag in all areas of the North Plant where removed by contractors required construction operations.	6/4/98	6/11/98 disapproved	6/12/98	$4,567.80	0	N/A	N/A	N/A

Appendix D
Construction Inspection Report
North and South Plants
Construction and Sitework
Punch List

M E M O R A N D U M

URS Greiner

2520 Venture Oaks Drive, Suite 250
Sacramento, CA 95834
Telephone: (916) 929-2346
Facsimile: (916) 929-7263

To: Eric Thomson, Clearwater Environmental, Inc.

From: Paul Schultz and Dwayne Deutscher

Date: 9 JULY 1998

Subject: *Newmark RA Plant Construction Punch List*

Here is a formal list of punch list items as discussed during the site visit of 7 JULY 1998. Please make the necessary site improvements prior to testing currently scheduled for 15 and 16 JULY 1998.

North Plant

1. Plane down asphalt (high spot) around SE corner of effluent meter vault so water flows off of vault.
2. Touch-up painting (General).
3. Clean-off surface contaminants and repaint backflow preventer.
4. Clean-off asphalt adhering to pipe/ground surface penetrations.
5. Repair concrete finish at NW corner of S pad.
6. Fix rocking grating at N end of S pad.
7. Remove marking paint from grating.
8. Repair hole in concrete at conduit penetration on S pad.
9. Patch and seal asphalt in open graded areas as discussed during site walk.
10. Repair asphalt failure at west edge of paving limits
11. Remove tire tracks and asphalt from vault lids
12. Remove concrete fines from sacked concrete surfaces
13. Clean-up, remove dirt down to old slag, grade and reslag if necessary to restore to preconstruction conditions at extreme N side of plant site (stockpile location) W of trailers. Eliminate earth berms, etc.
14. Protect signal cable in effluent meter vault with flexible vinyl conduit.

Waterman Plant

1. Lay down additional slag to raise to AC grade and compact surface adjacent to S driveway.

File #
62470.13.03.e

ClearWater Tak'es
ENVIRONMENTAL, INC.

DCN 0414 File .13.03.e
Project No. 62470
CC:
PM___ PA/SCM___ SM ___ File X

July 13, 1998

URS GREINER, INC.
2710 GATEWAY OAKS DR.
Suite 250N
Sacramento, CA 95833
Att: Paul Schultz

Re: Punch List for Newmark OD Project

Dear Mr. Schultz:

Please be advised of the following two items addressed in subject punch list:

Item 13 - For North Plant requires the removal of dirt down to old slag in the areas where spoils material was stockpiled. Slag has been placed at this location to satisfy the punch list requirement. However, I have confirmed with the CSBWD that this area was excavated by the water department, for valve and transmission line installation. The slag was never replaced by the city. Clearwater anticipates minimal expense for this work, but requests formal approval from your office.

Item 21- At Waterman directs the restoration of the park irrigation system to its preconstruction condition. James Dye, during our site walk on the 7th of July , outline equipment not present at the start of construction. Because of work within the right - of - way by other contractors, the original supply line for our tie-in point no longer exists and additional work was necessary to make a tie-in for the system feed.

In the interest of project close-out, system operation, and client satisfaction, Clearwater is proceeding with these elements of work.

Clearwater requests formal approval for this work also before final installations are made. With this, we expect the system completion by Thursday or Friday of this week.

Best Regards,
CLEARWATER ENVIORNMENTAL, INC.

Eric Thomsom
Project Supervisor

REC'D JUL 20 1998

ET/mob

❑ Corporate Office: 1760 Abbott Rd., Anchorage, AK 99507, Phone (907) 522-3638 Fax (907) 522-6228
❑ E. 26 Jonathan Road, Bothell, WA 98012, Phone/Fax (425) 712-7527
❑ 391 Robin Circle, Vacaville, CA 95687, Phone/Fax (707) 449-0873
❑ 318 Vinehill Drive, Altadena, CA 91001, Phone/Fax (626) 398-4339

PUNCH LIST

NEWMARK O/U SOUTH PIPELINE SEGMENT 1
SBMWD SPECIFICATION NO. 1267

May 7, 1997

1. 4 valve covers (existing) are covered with A.C. in Stoddard Avenue. Remove A.C. and raise covers.

2. Sta 18+20 (Well #2). Valve riser on 12-inch drain from well is cracked. Replace.

3. Sta 27+14. Add valve extension on 16-inch B.F.V. (24-inch pipeline).

4. Sta 42+46. Clean A.C. from bottom of valve can.

5. Sta 32+70. Add valve extensions (2 valves).

6. Sta 38+40. Add valve extensions (2 valves).

7. At 17th Street Plant, add temporary A.C. and raise street to grade.